Cost-Effective Data Collection to Support Planning and Marketing of Transportation Services for Transportation-Handicapped People

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This paper is based on *Planning Services for Transportation-Handicapped People: Data Collection Manual*, which was the result of a 5-year research effort. Cost-effective methods of assessing the size, characteristics, and travel habits of the transportation-handicapped population and the effectiveness of current transportation services in meeting the needs of this population are presented. This type of information is necessary for planning, marketing, and evaluating public transportation services and facilities for transportation-handicapped people.

In this paper is discussed a data collection process for use by local transportation planning agencies and transit operators in planning, marketing, and evaluating public transportation services and facilities for transportation-handicapped people. The paper is based on an extensive 5-year research effort, conducted by Peat, Marwick, Mitchell & Company, for UMTA. In that effort various methods of collecting data on the characteristics and transportation needs of transportation-handicapped people were assessed. The result was the development of several data collection techniques that address the following issues:

- What is the size of the transportation-handicapped population within a local area?
- What are the characteristics of the local transportation-handicapped population in terms of disability, geographic distribution, and transportation needs?
- What are the travel habits of the local transportation-handicapped population?
- How effective are current public transportation services and facilities in serving the needs of the transportation-handicapped population?

ELEMENTS OF DATA COLLECTION

Data collection for developing information on the transportation-handicapped population of a local area consists of three interrelated elements, each of which represents a separate technique or group of techniques, and a fourth element for continued service monitoring. Multiple techniques are used because no one technique can effectively and efficiently provide all of the information needed to properly plan for the needs of transportation-handicapped people.

The first three elements provide increasingly detailed information on the number, characteristics, and needs of the local transportation-handicapped population. This information is used primarily for developing new or changed services. The first three elements are

- Areawide telephone survey to establish the overall size, characteristics, travel habits, and transportation needs of the local transportation-handicapped population;
- Census data factoring of areawide telephone survey data to estimate the geographic distribution of the local transportation-handicapped population by census tract or other small subarea; and
- Small subgroup survey to develop, with the help of local social service organizations, additional documentation on small but important subgroups of the transportation-handicapped population.

The fourth element extends the data collection process beyond the planning and design stages to the monitoring and evaluation stages and involves ongoing service monitoring to monitor and evaluate the use of public transportation services by transportation-handicapped people through registration files, on-board counts, service request and inquiry files, or a combination of methods. Figure 1 shows this four-part data collection process.

Areawide Telephone Survey

The purpose of the areawide telephone survey is to locate transportation-handicapped people and obtain information about their *(a)* disabilities, *(b)* travel habits, and *(c)* transportation problems and needs. The survey technique involves telephoning subjects who live in the study area. Two questionnaires are needed. The first, the screening questionnaire, enables the interviewer to screen a random sample of households to identify those with transportation-handicapped residents. The second, called the handicapped-person questionnaire, is completed only for those people identified in the random sample as transportation handicapped. This questionnaire is more detailed than the screening questionnaire and includes questions on the subjects' transportation problems, needs, and travel habits.

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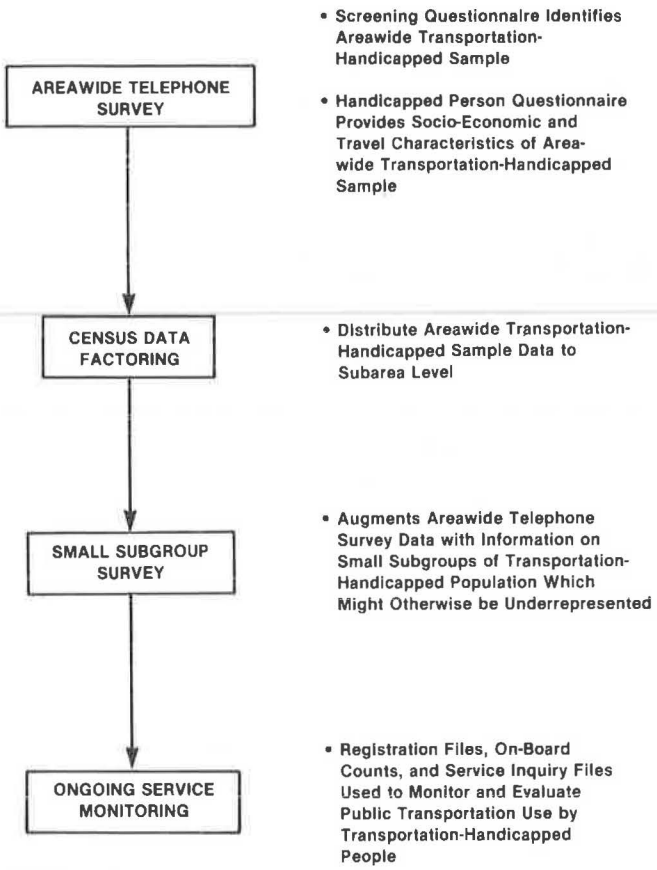

FIGURE 1 Data collection for planning for transportation-handicapped persons.

For the areawide telephone survey, a relatively small random sample of households is contacted to obtain reliable information on transportation-handicapped individuals on an areawide basis (e.g., city, transit district, or Standard Metropolitan Statistical Area). For most local areas, a sample size of from 2,000 to 3,000 households is considered adequate for estimating the size of this population. A much larger sample is needed to yield reliable information on a disaggregate, subarea basis (e.g., neighborhood, census tract, or travel analysis zone).

Census Data Factoring of Areawide Telephone Survey Data

Research has demonstrated that transportation-handicapped people are not uniformly distributed over an entire urban area. Therefore some method is needed to break down the areawide information on this group to the subarea level of detail.

Instead of expanding the size of the sample included in the areawide telephone survey, data from the 1980 Census can be used to disaggregate areawide information to the census tract level. This capability is unique to the 1980 Census, which included a question concerning a person's inability to use public transportation because of a physical or mental handicap. When the percentage of transportation-handicapped people for each census tract in a specified study area has been developed using the 1980 Census, the resulting percentages can be applied to areawide data developed from the areawide telephone survey. This cost-effective technique provides a reliable method of disaggregating the areawide telephone survey data without increasing the size of the telephone survey sample. For most urban areas, developing and applying the census tract percentage of transportation-handicapped people will require only a few days of staff time plus the cost of acquiring one or two reels or printed tabulations of census data.

Small Subgroup Survey

The incidence of certain subgroups of the transportation-handicapped population (e.g., wheelchair users and blind and mentally disabled people) is usually so small that an areawide telephone survey will not yield enough statistically significant information. Another technique, the third step in the recommended data collection process, must therefore be used. It entails collecting information on such subgroups with the help of social service organizations.

This technique is not intended to develop a probability sample of certain transportation-handicapped subgroups because the sampling technique is neither random nor necessarily representative. It excludes those within each subgroup who are not clients of the social service agencies or other local organizations. However, the technique can quickly locate a significant number of individuals from small transportation-handicapped subgroups whose views might not otherwise be adequately reflected by the areawide telephone survey results.

The cost of contacting social service agencies and other local organizations to collect information on specific subgroups of the transportation-handicapped population will depend on *(a)* the number of groups to be contacted and the degree of cooperation given the survey team, *(b)* the extent to which persons within the subgroups belong to any one organization, and *(c)* how much requested information members are willing and able to supply. When the survey team is unable to contact clients of a particular social service organization directly, it may be possible to have the organization conduct the interview or distribute self-administered questionnaires to its clients, who can then complete and return them either to the social service organization or to the survey office.

Ongoing Service Monitoring

The fourth element of the recommended data collection process consists of monitoring the use of public transportation services by transportation-handicapped people. Techniques include

- Developing and reviewing registration files of persons using specialized transportation service programs,
- Performing periodic counts of transportation-handicapped passengers who use these programs, and
- Reviewing records of requests for or inquiries about specialized transportation services.

Each of these techniques involves developing and using an easily maintained data base to monitor and evaluate the use of public transportation services by transportation-handicapped people. This information can then be used by transportation

planners and transit operators to revise or fine tune their special transportation service programs.

The cost of monitoring the use of public transportation services by transportation-handicapped people depends on many factors, including *(a)* the technique used, *(b)* the frequency of data collection, *(c)* the amount of data collected, and *(d)* the sample size. Registration files and service request or inquiry records make possible low-cost monitoring, especially for those organizations that already use such records in special transportation service programs.

IMPLICATIONS OF THE DATA COLLECTION PROCESS

The data collection process described in this paper has several implications for local transportation planners and transit operators:

- It is comprehensive. Both primary and secondary data collection techniques are used to develop local subarea information on the number, location, characteristics, and transportation needs of transportation-handicapped people.
- It develops statistically reliable estimates of the characteristics of the local transportation-handicapped population, and provides significant information on the specialized transportation needs of its small subgroups.
- It is adaptable to local planning needs and resources. Each of the techniques can be tailored to the size and resources of the local area. The techniques represent the most cost-effective procedures for developing comprehensive and reliable information on local transportation-handicapped people.
- It enhances the usefulness of census data on the transportation-handicapped population. The census data are used to distribute independent areawide data to the subarea (census tract) level. This avoids the problems of underrepresentation and data obsolescence that might result from using census data alone to estimate current incidence rates of transportation-handicapped people at the local level.
- It is relatively simple. Sample sizes are provided in the detailed manual for the areawide telephone survey, based on the population of the local area, the confidence level of the estimate, and its relative error. Screening and interviews are conducted by telephone thereby avoiding the costs and logistical problems associated with personal interviews and the low response rates associated with mail-back questionnaires.

DATA COLLECTION MANUAL

Transportation service planners and providers will find more detailed information and instructions on how to apply each of the individual data collection techniques described in this paper in *Planning Services for Transportation-Handicapped People: Data Collection Manual (1)*. This manual provides step-by-step instructions, cost information, and supporting documentation for each of the recommended data collection techniques. It also contains detailed estimates of the areawide telephone survey sample sizes needed to estimate the incidence and daily travel rates of the local transportation-handicapped population. The appendixes to the manual contain illustrative examples of survey forms used in studies that demonstrated each of the techniques used in the overall data collection process.

REFERENCE

1. *Planning Services for Transportation-Handicapped People: Data Collection Manual*, rev. ed. DOT–I–83–40R. U.S. Department of Transportation, Jan. 1985.